IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of:			
Timothy W. CONNER *et al.*		Art Unit:	1631
Appln. No.:	09/922,293	Examiner:	Lori A. Clow
Filed:	August 6, 2001	Confirmation No.:	7785
For:	Nucleic Acid Molecules and Other Molecules Associated with Transcription in Plants	Atty. Docket:	16517.254

REVISED APPELLANTS' BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an Appeal from the Final Rejection of claims in the above-captioned patent application. A Notice of Appeal was filed on January 18, 2008. This Revised Appeal Brief is submitted in response to a Notification of Non-Compliant Appeal Brief dated March 26, 2008. Authorization to charge the official fees for this filing is given in the accompanying transmittal letter.

1. Real Party in Interest

The real party in interest is Monsanto Company, a Delaware corporation with offices at 800 North Lindbergh Boulevard, St. Louis, Missouri 63167.

2. Related Appeals and Interferences

The Real Party filed an Appeal Brief in U.S. Patent Application Serial No. 09/199,129, which may have a bearing on the present appeal.

3. Status of Claims

Claims 10, 14-18, 21, 23, and 24 are pending. Claims 1-9 were cancelled by Appellants in the response dated August 6, 2001. Claim 13 was cancelled by Appellants in the response dated December 9, 2003. Claims 11-12 were cancelled by Appellants in the response dated June 9, 2004. Claim 19 was cancelled by Appellants in the response dated July 13, 2006. Claims 20 and 22 were cancelled by Appellants in the response dated December 22, 2005. Claims 10, 14-18, 21, 23, and 24 stand finally rejected under 35 U.S.C. § 112, first paragraph, written description and 35 U.S.C. § 112, first paragraph, enablement. Appellants appeal all of the rejections of each of claims 10, 14-18, 21, 23, and 24.[1]

4. Status of Amendments

Appellants have not filed any responses to the Final Office Action dated September 19, 2007 ("Final Office Action").

5. Summary of Claimed Subject Matter

A. Independent Claim 10: The subject matter of independent claim 10 is directed to an isolated transcription factor, wherein said transcription factor is encoded by a nucleic acid

[1] Claims 10, 14-18, 21, 23, and 24 remain in this case. Patentability of claims 10, 14-18, 21, 23, and 24 is addressed together in Sections 7.A through 7.C below. The separate patentability of claim 10 is discussed in sections 7.A, 7.C(1)(a), and 7.C(3). The separate patentability of claim 14 is discussed in sections 7.A, 7.C(1)(b), and 7.C(3). The separate patentability of claim 15 is discussed in sections 7.A, 7.C(2)(a), and 7.C(3). The separate patentability of claim 16 is discussed in sections 7.A, 7.C(2)(b), and 7.C(3). The separate patentability of claim 17 is discussed in sections 7.A, 7.C(2)(c), and 7.C(3). The separate patentability of claim 18 is discussed in sections 7.A, 7.C(2)(d), and 7.C(3). The separate patentability of claim 21 is discussed in sections 7.A, 7.C(1)(c), and 7.C(3). The separate patentability of claim 23 is discussed in sections 7.A, 7.C(1)(d), and 7.C(3). The separate patentability of claim 24 is addressed in Sections 7.A, 7.B, 7.C(1)(e), and 7.C(3) below.

molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof. Specification at page 32, lines 12-15; page 232, line 5; and Table A.

B. Independent Claim 14: The subject matter of independent claim 14 is directed to a substantially purified nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof. Specification at page 32, lines 12-15; page 55, lines 9-11; page 232, line 5; and Table A.

C. Independent Claim 15: The subject matter of independent claim 15 is directed to a substantially purified nucleic acid molecule, wherein said nucleic acid molecule comprises a nucleic acid sequence that shares between 100% and 90% sequence identity with SEQ ID NO: 1 or the complete complement thereof. Specification at page 32, lines 12-15; page 55, lines 11-14; page 232, line 5; and Table A.

(i) Dependant Claim 16. The subject matter of dependent claim 16 is directed to a substantially purified nucleic acid molecule, wherein the nucleic acid sequence shares between 100% and 95% sequence identity with SEQ ID NO: 1 or the complete complement thereof. Specification at page 32, lines 12-15; page 55, lines 14-17; page 232, line 5; and Table A.

(ii) Dependant Claim 17. The subject matter of dependent claim 17 is directed to a substantially purified nucleic acid molecule, wherein the nucleic acid sequence shares between 100% and 98% sequence identity with SEQ ID NO: 1 or the complete complement thereof. Specification at page 32, lines 12-15; page 55, lines 17-20; page 232, line 5; and Table A.

(iii) Dependant Claim 18. The subject matter of dependent claim 18 is directed to a substantially purified nucleic acid molecule, wherein the nucleic acid sequence shares between 100% and 99% sequence identity with SEQ ID NO: 1 or the complete complement thereof. Specification at page 32, lines 12-15; page 55, lines 20-24; page 232, line 5; and Table A.

D. Independent Claim 21: The subject matter of independent claim 21 is directed to a recombinant nucleic acid construct encoding an isolated transcription factor, wherein said transcription factor is encoded by a nucleic acid molecule comprising a nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof. Specification at page 32, lines 12-15; page 55, lines 9-11; page 100, line 19 through page 155, line 2; page 232, line 5; and Table A.

E. Independent Claim 23. The subject matter of independent claim 23 is directed to a recombinant nucleic acid construct comprising a substantially purified nucleic acid molecule comprising a nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof. Specification at page 32, lines 12-15; page 55, lines 9-11; page 232, line 5; and Table A.

F. Independent Claim 24. The subject matter of independent claim 24 is directed to a plant genome comprising a recombinant nucleic acid construct comprising a substantially purified nucleic acid molecule comprising a nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof. Specification at page 32, lines 12-15; page 55, lines 9-11; 100, line 19 through page 123, line 3; page 232, line 5; and Table A.

A copy of the claims on appeal is attached hereto as Claim Appendix A.

6. Grounds of Rejection to be Reviewed on Appeal

The grounds of rejection to be reviewed in this Appeal are:

(a) whether pending claim 24 is unpatentable under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one of skill in the art that the inventors had possession of the claimed invention as of the filing date of the application; and

(b) whether pending claims 10, 14-18, 21, 23, and 24 are unpatentable under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

7. Argument

A. **Summary of Appellants' Position**

Appellants have provided an adequate description of the claimed plant genome comprising a nucleic acid sequence having the sequence of SEQ ID NO: 1, and complements thereof. Given at least the teachings of the specification, a person of ordinary skill in the art would, after reading the specification, understand that Appellants had possession of a plant genome comprising, *inter alia,* a nucleic acid sequence having the sequence of SEQ ID NO: 1 and complements thereof. Because the specification demonstrates that Appellants had possession of (and has provided an adequate description of) the plant genome, the specification satisfies the written description requirement of 35 U.S.C. § 112.

Appellants have also provided sufficient disclosure in the specification to enable a person skilled in the art to make and/or use the invention. Because the specification teaches how to make and use the claimed nucleic acid molecules without undue experimentation, Appellants have also satisfied the enablement requirement of 35 U.S.C. § 112, first paragraph. Furthermore,

an analysis of the criteria presented by *In re Wands*, 858 F.2d 731, 8 U.S.P.Q.2d 1400 (Fed. Cir. 1998), indicates that no undue experimentation would be required to make and use the claimed invention.

B. The Claimed Plant Genome Satisfies the Written Description Requirement of 35 U.S.C. § 112, first paragraph

The Examiner rejected claim 24 under 35 U.S.C. § 112, first paragraph, as allegedly "not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention." Final Office Action at page 2. This is not the case.

The purpose of the written description requirement is to ensure that the inventors had possession of the claimed subject matter, *i.e.*, to ensure that the inventors actually invented what is claimed. *Gentry Gallery Inc. v. Berkline Corp.*, 134 F.3d 1473, 1479 (Fed. Cir. 1998); *Lockwood v. American Airlines*, 107 F.3d 1565, 1572 (Fed. Cir. 1997); *In re Alton*, 76 F.3d 1168, 1172 (Fed. Cir. 1996). If a person of ordinary skill in the art would, after reading the specification, understand that the inventors had possession of the claimed invention, even if not every nuance, then the written description has been met. *In re Alton*, 76 F.3d at 1175. Indeed, the Federal Circuit stated that "[i]t is not necessary that every permutation within a generally operable invention be effective in order for an inventor to obtain a generic claim, provided that the effect is sufficiently demonstrated to characterize a generic invention." *Capon v. Eshhar*, 418 F.3d 1349, 1359 (Fed. Cir. 2005). A person of ordinary skill in the art would, after reading the present specification, understand that Appellants had possession, *inter alia,* of a plant genome comprising a recombinant nucleic acid construct comprising a substantially purified

nucleic acid molecule that comprises a nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof.

In rejecting the claims, the Examiner asserts that "[t]he specification fails to provide a description of the genus that represents all genomes, and therefore the claim lacks written description." Final Office Action at page 2. The Examiner further alleges that "the specification does not support for the breadth of the recombinant molecule now recited." *Id.* Appellants disagree.

A person of ordinary skill in the art would, after reading the present specification, understand that Appellants had possession of a plant genome comprising a recombinant nucleic acid construct comprising a substantially purified nucleic acid molecule that comprises a nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof. The specification provides that "[o]ne or more of the nucleic acid molecules of the present invention may be used in plant transformation or transfection" and that "[e]xogenous genetic material may be transferred into a plant cell and the plant cell regenerated into a whole, fertile or sterile plant." Specification at page 100, lines 19-22. Alone, this is sufficient to satisfy the written description requirement of 35 U.S.C. § 112, first paragraph.

In rejecting the claims, the Examiner further alleges that there is no written description support for a plant genome without parts (A), (B), and (C)[2] as set forth pages 39-41 of the specification and original claim 6. *Id.* at pages 2-3. In making this rejection, the Examiner implies that the aforementioned parts (A), (B), and (C) are essential elements and must be

[2] Without being limited, the specification at pages 39-41 provide transformed plants having nucleic acid molecules which may comprise: (A) an exogenous promoter region; which is linked to (B) a structural nucleic acid molecule; which is linked to (C) a 3' non-translated sequence.

present in the claims in order to satisfy the written description requirement of 35 U.S.C. § 112, first paragraph. *Id.* Appellants strongly disagree.

The specification teaches that the use of regulatory elements, such as promotors, are not a required feature of transformed plants and host cells. For example, the specification provides that a "vector or construct may also include regulatory elements." *Id.* at page 106, line 22 (emphasis added). Additionally, "[a] construct or vector may include a plant promoter to express the protein or protein fragment of choice." *Id.* at page 101, lines 22-23 (emphasis added). The specification also provides that "[c]onstructs or vectors may also include with the coding region of interest a nucleic acid sequence that acts, in whole or in part, to terminate transcription of that region." *Id.* at page 106, lines 16-17 (emphasis added). Given its plain meaning, "may" does not constitute a requirement. Rather, "may" is akin to an option. Taken together, the specification provides written description to one of ordinary skill in the art on how to produce transformed plants comprising, for example, SEQ ID NO: 1, and that SEQ ID NO: 1 may or may not be associated with regulatory sequences. As such, the specification fully supports at least claim 24.

Appellants strongly disagree with the Examiner's assertion that the specification provides no support for a plant genome without a promoter and a 3' non-translated sequence. Final Office Action at page 3. As presented, claim 24 does not require the inclusion of regulatory elements. Claim 24 does not even require expression of SEQ ID NO:1 in a transformed plant. The fact that the claims at issue are intended to cover a plant genome comprising SEQ ID NO: 1 that may or may not include regulatory elements, does not mean that Appellants were any less in possession of the claimed transformed plants and host cells.

The fact that the claimed plant genome may comprise additional features is beside the point. Such modifications are readily envisioned by one of ordinary skill in the art and disclosed throughout the specification. See, for example, Specification at page 101, line 22 through page 103, line 2 (disclosing that one may use a variety of regulatory sequences such as promoter sequences and enhancer sequences in plants). Further, the specification as filed discloses a number of plants into which the genetic material can be transferred, including maize, soybean, *Arabidopsis*, oat, sugarcane, cotton, sugarcane, and coffee. Specification at page 101, lines 1 to 11. The Examiner ignores this point when rejecting the claims. Again, the exogenous genetic material introduced (*e.g.*, SEQ ID NO: 1) may or may not be associated with regulatory sequences.

The Examiner has offered no evidence to demonstrate, in light of the Appellants' disclosure, why one of ordinary skill in the art would reasonably doubt that the invention encompassed by the claims has not been adequately described in the present disclosure. Therefore, Appellants respectfully request that the Board reverse the written description rejection of claim 24 under 35 U.S.C. § 112, first paragraph.

C. **The Claimed Nucleic Acid Molecules Satisfy the Enablement Requirement of 35 U.S.C. § 112, first paragraph**

The Examiner rejected claims 10, 14-18, 21, 23, and 24 under 35 U.S.C. § 112, first paragraph, as allegedly containing "subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention." Final Office Action at page 3. The Examiner also asserts that "[t]he specification does not teach the specific transcription factor activity of SEQ ID NO:1" *Id.* at page 4. Such assertions are incorrect and unsupported.

The Examiner has not met the evidentiary burden to impose an enablement rejection. A specification that discloses how to use a claimed invention "must be taken as in compliance with the enabling requirement of the first paragraph of § 112 unless there is reason to doubt the objective truth of the statements contained therein." *In re Brana*, 51 F.3d 1560, 1566, 34 U.S.P.Q.2d 1436, 1441 (Fed. Cir. 1995), *quoting In re Marzocchi*, 439 F.2d 220, 223, 169 U.S.P.Q. 367, 369 (C.C.P.A. 1971) (emphasis in original).

As the M.P.E.P. makes clear, "(t)he specification need not disclose what is well-known to those skilled in the art and preferably omits that which is well-known to those skilled and already available to the public." M.P.E.P. § 2164.05(a). *See also, In re Buchner*, 929 F.2d 660, 661 (Fed. Cir. 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987); and *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1463 (Fed. Cir. 1984). Furthermore, it is well-established patent jurisprudence that Appellants need not teach "conventional and well-known genetic

engineering techniques." *Ajinomoto Co. v. Archer-Daniels-Midland Co.*, 228 F.3d 1338, 1345 (Fed. Cir. 2000).

(1) Appellants have enabled the class of nucleic acid molecules comprising SEQ ID NO: 1

(a) Appellants have enabled an isolated transcription factor, wherein the transcription factor is encoded by a nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof.

As previously stated, Claim 10 is directed to, *inter alia,* an isolated transcription factor, wherein said transcription factor is encoded by a nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof. The Examiner bases the rejection of claim 10 for lack of enablement on the assertion that SEQ ID NO: 1 is unlikely to function as a transcription factor. Final Action at page 4. Appellants disagree.

At the outset, Appellants strongly disagree with the Examiner's assertion that "[t]he specification does not teach the specific transcription factor activity of SEQ ID NO: 1." Final Office Action at page 4. The Examiner acknowledges that page 32, lines 12 to 15 of the specification provides "a substantially purified maize, soybean, or *Arabidopsis thaliana* homebox transcription factor or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 49, SEQ ID NO: 1415 through SEQ ID NO: 1555 and SEQ ID NO: 1746 through SEQ ID NO: 2000." Final Office Action at page 4. Alone, this is sufficient to satisfy the enablement requirement of 35 U.S.C. § 112, first paragraph. Moreover, in the Office Action mailed October 4, 2006, the Examiner even acknowledges that substantially purified nucleic acid molecules comprising the nucleic acid

sequence of SEQ ID NO: 1 has utility as it is "drawn to a transcription factor with known sequence comparison to a to a sequence comprising MADS box domain." Office Action mailed October 4, 2006 at page 8.

Further, an analysis of the criteria presented in *In re Wands* supports the Appellants' position that no undue experimentation would be required to make and use the claimed invention. *See In re Wands*, 858 F.2d 731, 737, 8 U.S.P.Q.2d 1400, 1404 (Fed. Cir. 1998). Appellants have provided considerable direction and guidance such that it is well within the level of ordinary skill in the art to practice the claimed invention without undue experimentation. For example, the specification discusses numerous nucleic acid molecules, including SEQ ID NO: 1 and complement thereof. Specification, for example, at page 223, line 1 through page 332, line 49 and Table A. In addition, the specification is replete with examples of host cells capable of being used in the invention. Specification, for example, at page 123, line 4 though page 155, line 2. Further, the specification provides guidance to one of skill in the art on how to produce transformed plants comprising the disclosed sequences. Specification, for example, at page 100, line 19 though page 123, line 3. Taken in combination, such disclosure provides adequate direction to those skilled in the art of how to make and use the claimed invention without undue experimentation.

The first *Wands* criterion is the quantity of experimentation necessary. The "make-and-test" quantum of experimentation is reduced by the extensive knowledge, *e.g.*, of conservative nucleotide substitutions, expression systems, and enzyme assay conditions, to which a person of ordinary skill in the art has access. One of ordinary skill in the art is sufficiently guided by the Appellants' disclosure, which sets forth nucleic acid molecules as well as the fragments or

complements thereof. Specification, for example, at page 223, line 1 through page 332, line 49 and Table A. Further, one of ordinary skill in the art would be sufficiently guided by the Appellants' disclosure, which sets forth numerous plants and host cells capable of being used, without undue experimentation, with the disclosed sequences. For example, the specification provides guidance to one of ordinary skill in the art on how to produce at least transgenic plant cells (pages 100 to 122); fungal cells (pages 122 to 135), mammalian cells (pages 135 to 140), insect cells (pages 140 to 149), and bacterial cells (pages 149 to 155) with the sequences disclosed in the specification. Moreover, practitioners in the art are guided by the high level of skill in the art and the present disclosure of the specification (see, e.g., specification at page 100, line 19 through page 155, line 2 and Table A).

The second and third *Wands* criteria relate to the amount of direction or guidance given, and the presence or absence of working examples. The Examiner acknowledges that SEQ ID NO:1 has utility and contains a transcription factor MADS box at nucleotide positions 77-194. Office Action mailed October 4, 2006 at page 8. The Examiner also provides an alignment indicating that SEQ ID NO: 1 is 83.4% identical to a known transcription factor, Genebank Accession number g642128. Office Action mailed March 22, 2007 at page 5. Further, the Examiner acknowledges that nucleotides 77-247 of SEQ ID NO: 1 correspond to a MADS box domain. *Id.* Given these acknowledgements by the Examiner, Appellants fail to understand how one of ordinary skill in the art would need to practice undue experimentation in order to practice the invention in a manner that is commensurate in scope with the claims.

Further, Appellants dispute the Examiner's reliance on the K Box transcription factor domain to allegedly show that one of skill in the art would not know that SEQ ID NO: 1

functions as a transcription factor without engaging in undue experimentation. *Id.* For one, the Examiner has provided no scientific information whatsoever that all transcription factors must contain K boxes. Moreover, as pointed out by the Examiner, SEQ ID NO: 1 overlaps with the MADS box domain and is at least 83.4% identical to a known transcription factor. Further, given the specification, one of skill in the art would readily recognize that SEQ ID NO: 1 is a transcription factor. Specification, for example, at page 32, lines 12 to 15 and Appendix A. Given at least this, one of ordinary skill in the art would have the ability to make and use the invention commensurate in scope with the claims without undue experimentation.

The fourth, fifth, and sixth *Wands* criteria focus on the nature of the invention, the state of the art, and the relative skill in the art. The specification provides a detailed description of the nucleic acid sequences required by the claims, and constructs and methods of use related thereto. Specification, for example, at page 223, line 1 through page 332, line 49, Table A; and the Sequence Listing. (describing polypeptide molecules encoded by the nucleic acid sequences of the present invention, homologues and other modifications), page 100, line 19 through page 123, line 3 (describing use of the claimed nucleic acid molecules and complements thereof in methods of transforming plants), and page 123, line 4 though page 155, line 2 (describing use of the claimed nucleic acid molecules and complements thereof in methods of transforming host cells). Practitioners in this art are guided by considerable knowledge and resources on the conditions and approaches that can be utilized to generate transformed plant and host cells comprising the claimed sequences.

Appellants further dispute the Examiner's reliance on Bork *et al.* (*J. Mol. Biol.* **283**, 707 – 725, 1998) to show that gene function and protein function based on alignments is unpredictable.

Id. at page 5. Contrary to the Examiner's assertion, Bork *et al.* actually confirms that functional prediction based on structure has "proven extremely successful although, from a formal point of view the hypothesizes generated must be experimentally verified." Bork *et al.* at page 708, column 2. However, performing routine and well-known steps, such as sequence alignment protocols, molecular weight determination, and known enzyme assays, cannot create undue experimentation even if it is laborious. *See In re Angstadt*, 537 F.2d 498, 504, 190 U.S.P.Q. 214, 218-219 (C.C.P.A. 1976). Given that these are precisely the types of well-known protocols suggested Bork *et al.*, one of skill in the art, using Bork *et al.* together with the disclosure, would have the ability to practice the invention in a manner consistent with the claims without undue experimentation. That is, the teachings of the specification taken in combination with the knowledge of those skilled in the art provide adequate guidance regarding the identification of a transcription factor encoded by a nucleic acid sequence with known utility and function, such as the one set forth in SEQ ID NO:1.

The seventh criterion considers the predictability of the art. Appellants respectfully assert, as discussed *infra*, that the specification discloses sufficient guidance such that a person of ordinary skill in the art would, after reading the specification, have the ability to practice the invention in a manner that is commensurate in scope with the claims. Appellants also assert, as discussed *infra*, that the specification discloses sufficient guidance to render the results of transformations with the claimed nucleic acid molecules predictable. Specification at page 100, line 19 through page 123 and Examples 1-2. Furthermore, the specification provides sufficient guidance to one of skill in the art to make and use the claimed nucleic acid molecules. *Id.* at page 32, lines 12-15; Table A, and Example 3.

The eighth criterion focuses on the breadth of the claims. Enablement is satisfied when the disclosure "adequately guide[s] the art worker to determine, without undue experimentation, which species among all those encompassed by the claimed genus possess the disclosed utility". *See In re Vaeck,* 947 F.2d 488, 496, 20 U.S.P.Q.2d 1438, 1445 (Fed. Cir. 1991). In the present case, one of skill in the art is specifically guided by the disclosure to look to, *e.g.*, methods of transforming plants and host cells with the disclosed sequences in making that determination.

(b) Appellants have enabled a substantially purified nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof.

Independent claim 14 recites a substantially purified nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof. At the outset, Claim 14 does not require the substantially purified nucleic acid molecule to have activity as a transcription factor. However, the Examiner ignores this point when rejecting claim 14. Moreover, as discussed in Section 8.B(1), based on the teachings of the specification, one of ordinary skill in the art at the time the invention was made would have the ability to make and use the invention in a manner commensurate in scope with the claims without undue experimentation. Given the analysis set forth above, one of ordinary skill in the art would also recognize that the specification provides guidance on how to use a substantially purified nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 without undue experimentation. Thus, independent claim 14 satisfies the enablement requirement under 35 U.S.C. § 112, first paragraph.

(c) Appellants have enabled a recombinant nucleic acid construct encoding an isolated transcription factor, wherein the transcription factor is encoded by a nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof.

As discussed in Section 8.B(1), based on the teachings of the specification as well as an at least 83.4% identity to a known transcription factor, Genebank Accession number g642128, one of ordinary skill in the art at the time the invention was made would have the ability to make and use the invention in a manner commensurate in scope with the claims without undue experimentation. That is, a skilled artisan would appreciate that SEQ ID NO: 1 has a well-established utility as a transcription factor.

Independent claim 21 recites a recombinant nucleic acid construct encoding an isolated transcription factor, wherein the transcription factor is encoded by a nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof. Given the analysis set forth above, one of ordinary skill in the art would recognize that the nucleic acid molecules of claim 21 would be expected to have activity as a transcription factor. Further, the specification provides sufficient guidance to make and use recombinant nucleic acid constructs comprising SEQ ID NO: 1 such that one of ordinary skill in the art could practice the invention without undue experimentation. Specification at page 32, lines 12-15; page 55, lines 9-11; page 100, line 19 through page 155, line 2; page 232, line 5; and Table A. Thus, dependant claim 15 satisfies the enablement requirement under 35 U.S.C. § 112, first paragraph.

(d) Appellants have enabled a recombinant nucleic acid construct comprising a substantially purified nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof.

Independent claim 23 recites a recombinant nucleic acid construct comprising a substantially purified nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof. At the outset, Claim 23 does not require the nucleic acid construct to have activity as a transcription factor. However, the Examiner ignores this point when rejecting claim 23. Moreover, as discussed in Section 8.B(1), based on the teachings of the specification, one of ordinary skill in the art at the time the invention was made would have the ability to make and use the invention in a manner commensurate in scope with the claims without undue experimentation. Further, the specification provides sufficient guidance to make and use recombinant nucleic acid constructs comprising SEQ ID NO: 1 such that one of ordinary skill in the art could practice the invention without undue experimentation. Specification at page 32, lines 12-15; page 55, lines 9-11; page 100, line 19 through page 155, line 2; page 232, line 5; and Table A. Given the analysis set forth above, one of ordinary skill in the art would also recognize that the specification provides guidance on how to use a substantially purified nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 without undue experimentation. Thus, independent claim 23 satisfies the enablement requirement under 35 U.S.C. § 112, first paragraph.

(e) Appellants have enabled a plant genome comprising a recombinant nucleic acid construct comprising a substantially purified nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof.

Independent claim 24 recites a plant genome comprising a recombinant nucleic acid construct comprising a substantially purified nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof. At the outset, Claim 24 does not require the plant genome to have activity as a transcription factor. However, the Examiner ignores this point when rejecting claim 24. Moreover, as discussed in Section 8.B(1), based on the teachings of the specification, one of ordinary skill in the art at the time the invention was made would have the ability to make and use the invention in a manner commensurate in scope with the claims without undue experimentation. Further, the specification provides sufficient guidance to make and use a plant genome comprising SEQ ID NO: 1 such that one of ordinary skill in the art could practice the invention without undue experimentation. Specification at page 32, lines 12-15; page 55, lines 9-11; 100, line 19 through page 123, line 3; page 232, line 5; and Table A. Given the analysis set forth above, one of ordinary skill in the art would also recognize that the specification provides guidance on how to use a plant genome comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 without undue experimentation. Thus, independent claim 24 satisfies the enablement requirement under 35 U.S.C. § 112, first paragraph.

(2) Appellants have enabled nucleic acid molecules having a nucleic acid sequence that exhibits 90% or higher identity to a nucleic acid sequence of SEQ ID NO: 1.

Claims 15 through 18 are directed to nucleic acid molecules that exhibit between 90% and 100%; 95% and 100%; 98% and 100%; and 99% and 100%, respectfully, sequence identity with SEQ ID NO:1 or the complete complement thereof. Appellants respectfully submit that each of claims 15 through 18 satisfy the enablement requirement of 35 U.S.C. § 112, first paragraph, for the reasons discussed in Section 8.B(1) above.

(a) Appellants have enabled a substantially purified nucleic acid molecule, wherein said nucleic acid molecule comprises a nucleic acid sequence that shares between 100% and 90% sequence identity with SEQ ID NO: 1 or the complete complement thereof

As discussed in Section 8.B(1), based on the teachings of the specification as well as an at least 83.4% identity to a known transcription factor, Genebank Accession number g642128, one of ordinary skill in the art at the time the invention was made would have the ability to make and use the invention in a manner commensurate in scope with the claims without undue experimentation. That is, a skilled artisan would appreciate that SEQ ID NO: 1 has a well-established utility as a transcription factor. Further, it is well established that a sequence comparison for an unknown nucleic acid molecule that results in 90% or greater nucleotide identity with a nucleic acid molecule having a known function is a reasonably reliable method for predicting the function of that unknown nucleic acid molecule.

Independent claim 15 recites a substantially purified nucleic acid molecule, wherein said nucleic acid molecule comprises a nucleic acid sequence that shares between 100% and 90% sequence identity with SEQ ID NO: 1 or the complete complement thereof. Given the analysis

set forth above, one of ordinary skill in the art would recognize that the nucleic acid molecules of claim 15 would be expected to have activity as a transcription factor. Therefore, claim 15 is independently enabled because one of skill in the art would have the ability to practice the invention without undue experimentation. Thus, dependant claim 15 satisfies the enablement requirement under 35 U.S.C. § 112, first paragraph.

(b) Appellants have enabled a substantially purified nucleic acid molecule, wherein said nucleic acid molecule comprises a nucleic acid sequence that shares between 100% and 95% sequence identity with SEQ ID NO: 1 or the complete complement thereof.

As discussed in Section 8.B(1), based on the teachings of the specification as well as an at least 83.4% identity to a known transcription factor, Genebank Accession number g642128, one of ordinary skill in the art at the time the invention was made would have the ability to make and use the invention in a manner commensurate in scope with the claims without undue experimentation. That is, a skilled artisan would appreciate that SEQ ID NO: 1 has a well-established utility as a transcription factor. Further, it is well established that a sequence comparison for an unknown nucleic acid molecule that results in 95% or greater nucleotide identity with a nucleic acid molecule having a known function is a reasonably reliable method for predicting the function of that unknown nucleic acid molecule.

Dependant claim 16 recites a substantially purified nucleic acid molecule, wherein said nucleic acid molecule comprises a nucleic acid sequence that shares between 100% and 95% sequence identity with SEQ ID NO: 1 or the complete complement thereof. Given the analysis set forth above, one of ordinary skill in the art would recognize that the nucleic acid molecules of claim 16 would be expected to have activity as a transcription factor. Therefore, claim 16 is independently enabled because one of skill in the art would have the ability to practice the

invention without undue experimentation. Thus, dependant claim 16 satisfies the enablement requirement under 35 U.S.C. § 112, first paragraph.

(c) Appellants have enabled a substantially purified nucleic acid molecule, wherein said nucleic acid molecule comprises a nucleic acid sequence that shares between 100% and 98% sequence identity with SEQ ID NO: 1 or the complete complement thereof.

As discussed in Section 8.B(1), based on the teachings of the specification as well as an at least 83.4% identity to a known transcription factor, Genebank Accession number g642128, one of ordinary skill in the art at the time the invention was made would have the ability to make and use the invention in a manner commensurate in scope with the claims without undue experimentation. That is, a skilled artisan would appreciate that SEQ ID NO: 1 has a well-established utility as a transcription factor. Further, it is well established that a sequence comparison for an unknown nucleic acid molecule that results in 98% or greater nucleotide identity with a nucleic acid molecule having a known function is a reasonably reliable method for predicting the function of that unknown nucleic acid molecule.

Dependant claim 17 recites a substantially purified nucleic acid molecule, wherein said nucleic acid molecule comprises a nucleic acid sequence that shares between 100% and 98% sequence identity with SEQ ID NO: 1 or the complete complement thereof. Given the analysis set forth above, one of ordinary skill in the art would recognize that the nucleic acid molecules of claim 17 would be expected to have activity as a transcription factor. Therefore, claim 17 is independently enabled because one of skill in the art would have the ability to practice the invention without undue experimentation. Thus, dependant claim 17 satisfies the enablement requirement under 35 U.S.C. § 112, first paragraph.

(d) Appellants have enabled a substantially purified nucleic acid molecule, wherein said nucleic acid molecule comprises a nucleic acid sequence that shares between 100% and 99% sequence identity with SEQ ID NO: 1 or the complete complement thereof.

As discussed in Section 8.B(1), based on the teachings of the specification as well as an at least 83.4% identity to a known transcription factor, Genebank Accession number g642128, one of ordinary skill in the art at the time the invention was made would have the ability to make and use the invention in a manner commensurate in scope with the claims without undue experimentation. That is, a skilled artisan would appreciate that SEQ ID NO: 1 has a well-established utility as a transcription factor. Further, it is well established that a sequence comparison for an unknown nucleic acid molecule that results in 99% or greater nucleotide identity with a nucleic acid molecule having a known function is a reasonably reliable method for predicting the function of that unknown nucleic acid molecule.

Dependant claim 18 recites a substantially purified nucleic acid molecule, wherein said nucleic acid molecule comprises a nucleic acid sequence that shares between 100% and 99% sequence identity with SEQ ID NO: 1 or the complete complement thereof. Given the analysis set forth above, one of ordinary skill in the art would recognize that the nucleic acid molecules of claim 18 would be expected to have activity as a transcription factor. Therefore, claim 18 is independently enabled because one of skill in the art would have the ability to practice the invention without undue experimentation. Thus, dependant claim 18 satisfies the enablement requirement under 35 U.S.C. § 112, first paragraph.

(3) Conclusion

Appellants submit that the rejection of 10, 14-18, 21, 23, and 24 under 35 U.S.C. § 112, first paragraph, has been overcome by the arguments set forth above. Appellants respectfully

submit that one skilled in the art at the time the invention was made would know how to make and use the claimed invention without undue experimentation. Therefore, Appellants request that the Board reverse the rejection of claims10, 14-18, 21, 23, and 24 under 35 U.S.C. § 112, first paragraph.

Conclusion

In view of the foregoing, Appellants respectfully request that the Board of Patent Appeals and Interferences reverse the pending rejections and that the subject application be allowed forthwith.

Respectfully submitted,

/Holly Logue Prutz/

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CLAIMS APPENDIX A

Claim 10. An isolated transcription factor, wherein said transcription factor is encoded by a nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof.

Claim 14. A substantially purified nucleic acid molecule comprising a nucleic acid sequence having the nucleic acid sequence of SEQ ID NO: 1 or the complete complement thereof.

Claim 15. A substantially purified nucleic acid molecule, wherein said nucleic acid molecule comprises a nucleic acid sequence that shares between 100% and 90% sequence identity with SEQ ID NO: 1 or the complete complement thereof.

Claim 16. The substantially purified nucleic acid molecule of claim 15, wherein said nucleic acid sequence shares between 100% and 95% sequence identity with SEQ ID NO: 1 or the complete complement thereof.

Claim 17. The substantially purified nucleic acid molecule of claim 16, wherein said nucleic acid sequence shares between 100% and 98% sequence identity with SEQ ID NO: 1 or the complete complement thereof.

Claim 18. The substantially purified nucleic acid molecule of claim 17, wherein said nucleic acid sequence shares between 100% and 99% sequence identity with SEQ ID NO: 1 or the complete complement thereof.

Claim 21. A recombinant nucleic acid construct encoding the isolated transcription factor of claim 10.

Claim 23. A recombinant nucleic acid construct comprising the substantially purified nucleic acid molecule of claim 14.

Claim 24. A plant genome comprising the recombinant nucleic acid construct of claim 23.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None.